

A NEW *CORYPHODON* FROM SINTAI, SHANTUNG

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Since the discovery of the first coryphodontid known in Asia (*Eudinoceros mongoliensis*) from the Upper Eocene Irdin Manha of Inner Mongolia, China (Osborn, 1924), a number of discoveries have been made on this interesting group of archaic ungulate in Sino-Mongolian region by the expeditions of American Museum of Natural History in Inner Mongolia and by those of Paleontological Institute of Academy of Sciences, USSR, in Mongolian Peoples Republic. Outside the Mongolian region remains of this group pertaining to the genus *Eudinoceros* have also been found in the correlative beds of Peking (Young, 1934), Ichang (Teilhard de Chardin and Young, 1936), and Dzungaria Basin of Northern Sinkiang (Chow and Hu, 1956). The materials from the Mongolian region have been summarized in a recent paper by Prof. C. C. Flerow (1957).

While three out of a total of eight known genera of the Family Coryphodontidae are known to occur in Asia, the most typical genus of this family, *Coryphodon*, which is represented by a variety of forms (more than twenty species) from the Upper Paleocene and Lower Eocene of North America and is the only genus of this family known in European Lower Eocene, has so far been considered to be absent in Asia. However, the present writer has recently received for identification a molar tooth and two limb bone fragments from Sintai district, Shantung province; and, it is interesting to note that the molar tooth, a second upper one, is evidently more close to that of the genus *Coryphodon* of North America Lower Eocene than any other coryphodontids, and, according to the available evidences, it is hardly beyond the range of specific variation of this genus, therefore, it has been provisionally referred to it.

The stratigraphical occurrence of the fossils is unknown, but, as they are from the same district as the materials described by Zdansky, it is very likely that our specimens are found from, or near, one of the several localities reported first by Tan (1923) and later by Andersson and Zdansky respectively (1923, 1930).

On the other hand, although all the known species of the genus *Coryphodon* found in Western Europe and North America are of late Paleocene or Early Eocene age, the Chinese form, *C. flerowi*, sp. nov., which is evidently more progressive in molar structure (*vide infra*) than these early Eocene forms but less so in comparison with those belonging to the late Eocene or Oligocene genera (i.e. *Eudinoceros* and *Hypercoryphodon*), came most probably from a horizon higher than those for the European and American

forms. This inference is in accord with the fact that one of the previously known localities in the same general area, i.e., the Kuanchuan locality in the neighboring district of Mengyin, from where, according to Zdansky (1932), mammalian fauna (with *Propaleotherium*, *Heptaconodon*, *Haplomylus*, etc.) of probably middle Eocene (Lutetian) age had been found. Therefore, the age of the new fossils are provisionally considered to be Middle Eocene.

The finding of the genus *Coryphodon* in China, as is viewed from the structure of the type tooth and its possible stratigraphical affinity, is highly interesting because in general it serves well to fill the morphological and stratigraphical gaps which might be theoretically expected to exist between that of the early American forms and the late forms found in Asia before.

Coryphodon Owen

Coryphodon flerowi, sp. nov.

Type—A left second upper molar slightly broken on the antero-external corner. IVP No. V. 927.

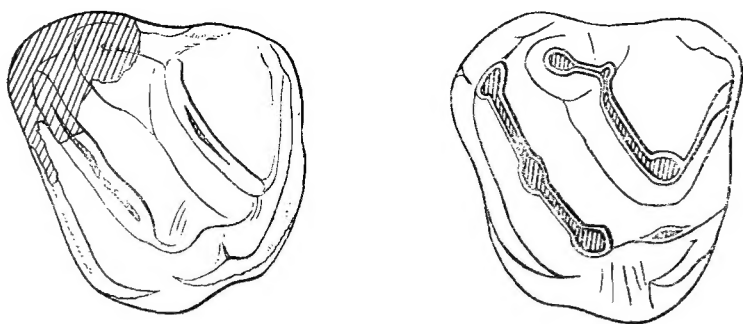


Fig. 1. Sketches of the second upper molars. Left—*Coryphodon flerowi*, sp. nov.; right—*Coryphodon testis*, after Osborn. Natural size.

Horizon and Locality.—Middle (?) Eocene; Kaojichuan, Sintai district, Shantung.

Specific characters—A *Coryphodon* comparable to *C. testis* and *C. hamatus* in size but differs from all the other known species of this genus in being more progressive in molar structure. The posterior crest of the protoconic crescent is only rudimentarily developed (nearly so in *C. hamatus*), so that the anterior crest of the tooth is nearly isolated from the posterior crescent and more typically lophoid. Nevertheless, the lophs are still quite obliquely set as in the early coryphodonts, in contrast to the condition seen in the later forms (as *Hypercoryphodon*) in which the "protoloph" is transversal.

The cingulum is nearly continuous on the lingual side. Although no hypocone like that in *C. hamatus* [*Maneteodon subquadratus* (Cope)] is developed, but a small hypocone-

like structure is present on the postero-internal side of the cingulum which recalls very much the one observed in the last mentioned species with which the Chinese species may have closer comparison when the structure of the second upper molar as a whole is considered. From this point of view the age of the fossil bearing beds in Sintai may even be earlier than Middle Eocene as was indicated above. At the same time it seems to be probable that *C. hamatus* may represent a early Eocene immigrant to America from an Asiatic stock which probably is generically different, but not far divergent, from the more generalized (or more typical) early American forms. And we can expect to find early coryphodonts in Asia more advanced than *Procoryphodon*. However, it is likewise reasonable to consider the new Chinese form as new genus of the Coryphodontids from which the known later Asiatic genera had evolved.

The dimension of the upper molar is 37.5 mm long and 38 mm wide. The length of the tooth is much greater on the external side than on the inner.

Beside the molar tooth a proximal fragment of a right humerus (V. 927. I) from the same source may also be referred to this species and belongs probably to the same individual. It is characterized by its massiveness and prominent deltoid ridge.

In addition to the tooth and limb bone fragment there is another piece of limb bone (IVP V. 928) in the same collection which is a right humerus (distal half) of a medium-sized *Mesonyx*-like creodont. It is 32 mm wide at the distal end.

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Coryphodon 屬的一个新种

(节要)

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这篇短文描述和讨论了 *Coryphodon* 属在中国(山东新泰高义庄)首次发现的一个新种。

Coryphodon 属是 *Coryphodontidae* 种中分布最广和最典型的一属, 在欧洲和北美曾发现有二十余个不同的种, 时代为古新世晚期及始新世初期。

中国的新种, *Coryphodon flerowi* Chow, 大小和美洲的 *C. testis* 及 *C. hamatus* 相近, 但由臼齿(M²)的构造上看, 比北美的为进步。“原尖脊”已几乎完全与“后脊”分离, 但并未全达到在 *Eudinoceros* 等中完全孤立分开的地步。因此, 其时代可能为始新世初期或稍晚(中期)。新泰的标本很可能是代表亚洲时代较晚的属的祖先的一个新属。

过去, 由于这一属在西欧和北美有广泛的分布, 而在亚洲同一时代及以前整个这一科都没有找到; 但到始新世末期, 当其他两大陆上已经绝灭后方在亚洲出现, 且分布很广。因此, 一直到最近为止, 苏联弗辽洛夫教授在他关于蒙古这一类化石的总结性论文中, 认为亚洲和北美在那时是分离的, 而到始新世后期才连通。根据新的发现, 这一推论显然还有疑问。弗辽洛夫教授同时认为关于这一类动物还有些重要分布和系统上的问题, 可能会通过亚洲的新发现来解决。新泰的发现和笔者最近在河南卢氏找到的标本(尚未研究)可以作为这一说法的有力证明。

EXPLANATION OF PLATE I

Figs. 1, 2. *Coryphodon flerowi* Chow, sp. nov.

1 —second upper molar (type), crown view.

1a—external view of the same.

1b—inner view of the same. All natural size.

2 —Proximal half of the right humerus, posterior view. $\frac{1}{2}$ nat. size.

Fig. 3. *Creodontia* indet.

3 —distal end of a right humerus, posterior view.

3a—external view of the same.

3b—anterior view of the same. All natural size.

